

CLAIMS

1. Voltage amplifier comprising a first field effect transistor (M1) with a gate, a drain and a source, the amplifier input terminal being the gate of the first field effect transistor, and the amplifier  
5 output terminal being the drain of this first field effect transistor, the voltage amplifier comprising:
- a first current generator (I1) that charges the drain of the first transistor (M1);
  - a second current generator (I0) that charges  
10 the source of the first transistor (M1), the value of the current output by the second current generator (I0) being substantially equal to the value of the current output by the first current generator (I1);
  - a first capacitor (C1) with a first terminal  
15 connected to the drain of the first transistor (M1) and a second terminal connected to a first reference voltage ; and
  - a second capacitor (C0) with a first terminal  
20 connected to the source of the first transistor (M1) and a second terminal connected to a second reference voltage,
- characterised in that it comprises an additional field effect transistor (M3) of the type opposite to  
25 the type of the first field effect transistor (M1), the drain of the additional transistor (M3) being connected to the drain of the first field effect transistor (M1), the gate of the additional transistor (M3) being connected to a voltage that is or is not offset from  
30 the voltage applied to the gate of the first field

effect transistor (M1), the source of the additional field effect transistor being connected to the first current generator (I1) and to a first terminal of an additional capacitor (C01) the second terminal of which  
5 is connected to a fixed voltage.

2. Amplifier according to claim 1, characterised in that, when the gate of the additional transistor is connected to a voltage offset from the voltage applied  
10 to the gate of the first field effect transistor (M1), it comprises a voltage offset circuit to form the voltage applied to the gate of the additional transistor (M3) from the voltage applied to the gate of the first field effect transistor (M1).

15

3. Amplifier according to claim 2, characterised in that the voltage offset circuit is an external voltage source.

20 4. Amplifier according to claim 2, characterised in that the voltage offset circuit is a directly polarised diode.

5. Amplifier according to claim 1, characterised  
25 in that, when the gate of the additional transistor is connected to a voltage not offset from the voltage applied to the gate of the first field effect transistor (M1), the gate of the additional transistor and the gate of the first field effect transistor are  
30 connected together.

6. Amplifier according to any one of the previous claims, characterised in that it comprises a slaving circuit to control its output voltage.

5           7. Amplifier according to claim 6, characterised in that the slaving circuit is composed of a resistor (R1) connected between the drain of the first transistor (M1) and a fixed voltage.

10           8. Amplifier according to claim 6, characterised in that the slaving circuit is composed of a read circuit (As) in which the amplifier output voltage (VS) is applied to the input of said read circuit, and a control signal is output by said read circuit to  
15 control the gate of a transistor (M2a, M2b) that forms the first or the second current generator.

          9. Amplifier according to claim 8, characterised in that it comprises a low pass filter (R2, C2) placed  
20 at the output from the read circuit to filter the control signal output by the read circuit (As).

          10. Amplifier according to claim 8 or 9, characterised in that the read circuit (As) is a  
25 voltage follower.

          11. Amplifier according to claim 8 or 9, characterised in that the read circuit (As) is a differential amplifier with two inputs, the amplifier  
30 output voltage being applied to a first input of the differential amplifier and a reference voltage being

applied to the second input of the differential amplifier.

12. Amplifier according to claim 8 or 9,  
5 characterised in that the read circuit (As) is an amplifier that amplifies the variations of the amplifier output voltage (VS) compared with a reference voltage determined from an adjustment voltage (Vr).

10 13. Amplifier according to claim 6, characterised in that the slaving circuit is composed of a MOS transistor mounted with common gate (TM) and the source of which is connected to the amplifier output.

15 14. Amplifier according to any one of the previous claims, characterised in that it is made using the MOS technology.

20 15. X photon or gamma detector comprising a charge/voltage amplifier and a voltage/voltage amplifier that amplifies the voltage output by the charge/voltage amplifier, characterised in that the voltage/voltage amplifier is an amplifier according to any one of claims 1 to 14.